Amoebiasis *(Entamoeba histolytica)*

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1) THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Entamoeba histolytica is a protozoan parasite that exists in two forms: the metabolically active trophozoite (potentially pathogenic form) and infective, environmentally resistant cyst. *Entamoeba histolytica* should not be confused with *E. dispar* (non-pathogenic and morphologically identical to *E.histolytica*), *E.hartmanni, E.coli* or other intestinal amoebae. The *E. histolytica* may act as a commensal organism or invade the tissues and give rise to intestinal or extraintestinal disease.

B. Clinical Description and Laboratory Diagnosis

Most infections are asymptomatic. Intestinal disease varies from acute dysentery with fever, chills and bloody diarrhea to mild abdominal discomfort with diarrhea containing blood or mucous alternating with periods of constipation or remission. Extraintestinal forms of infection including liver, lung or brain abscesses can occur after dissemination of parasite via the blood stream. The amebic liver abscess can appear concurrently with colitis but more frequently there is no evidence or history of recent intestinal infection by *E. histolytica.* Amebic colitis may be confused with inflammatory bowel disease, such as ulcerative colitis.

Laboratory diagnosis is made by microscopic identification of trophozoites or cysts in stool, aspirates, tissue or tissue scrapings. Differentiation of pathogenic *E. histolytica* from nonpathogenic *E. dispar* is based on immunologic differences and on isoenzymes patterns. Serologic tests are available as adjuncts in the diagnosis of extraintestinal amoebiasis.

C. Reservoirs

Humans, primarily chronic or asymptomatic carriers, are reservoirs for amoebiasis.

D. Modes of Transmission

This parasite is transmitted fecal-orally by ingestion of cysts. This can happen via contaminated food or water or through person-to-person spread, particularly among preschool children, within households and through certain types of sexual contact (*e.g.*, oral-anal contact).

E. Incubation Period

The incubation period is commonly from 2 to 4 weeks, but it can vary from a few days to several months or years.

F. Period of Communicability or Infectious Period

The disease is communicable for as long as the infected person excretes *E. histolytica* cysts, which may continue for years. Asymptomatically infected persons tend to excrete a much higher proportion of cysts and hence are more likely to transmit infection than persons who are acutely ill, who tend to excrete trophozoites.

G. Epidemiology

Amoebiasis has a worldwide distribution but is typically rare in children under the age of five. Prevalence is higher in areas with poor sanitation (such as parts of the tropics), in institutions for the developmentally disabled, and among men who have sex with men. The estimated prevalence in the United States is 4%. In New Jersey, on average about 42 cases of amoebiasis are reported every year to the NJDHSS.

2) REPORTING CRITERIA AND LABORATORY TESTING SERVICES

A. New Jersey Department of Health and Senior Services (NJDHSS) Case Definition

CASE CLASSIFICATION

A. CONFIRMED

Intestinal amebiasis: A clinically compatible case, **AND**

- Demonstration of *E. histolytica* cysts or trophozoites in the stool, **OR**
- Demonstration of trophozoites of *E. histolytica* in tissue biopsy or ulcer scrapings by histopathology or culture.

(Note: **asymptomatic** carriers should not be reported)

Extraintestinal amoebiasis:

- Demonstration of trophozoites of *E. histolytica* in extraintestinal tissue, **OR**
- Presence of specific antibody against *E. histolytica* as measured by indirect hemagglutination (IHA) or other reliable immunodiagnostic test such as enzyme linked immunosorbent assay (ELISA), in a **symptomatic person** with clinical and/or radiological findings consistent with extraintestinal infection.

NOTE: A positive serologic test in an **asymptomatic** person does not necessarily indicate extraintestinal amoebiasis.

B. PROBABLE

Not used.

C. POSSIBLE

Not used.

B. Laboratory Testing Services Available

The Public Health and Environmental Laboratories (PHEL) will test stool specimens for the presence of ova and parasites including *E. histolytica/dispar*. Serological testing is not provided; however arrangements can be made through PHEL for appropriate sample types to be sent to the Centers for Disease Control and Prevention (CDC) for diagnostic testing. Contact the PHEL at 609.292.7879 for more information.

3) DISEASE REPORTING AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify whether the patient may be a source of infection for other persons (*e.g.*, a diapered child, daycare attendee or foodhandler) and, if so, to prevent further transmission.
- To identify transmission sources of public health concern (*e.g.*, a contaminated public water supply) and to stop transmission from such a source.

B. Laboratory and Healthcare Provider Reporting Requirements

N.J.A.C. 8:57-1.8 stipulates that laboratories and health care providers report (by telephone, confidential fax, over the Internet using the Communicable Disease Reporting System [CDRS] or in writing) all cases of amoebiasis to the local health officer having jurisdiction over the locality in which the patient lives, or, if unknown, to the health officer in whose jurisdiction the health care provider requesting the laboratory examination is located.

C. Local Health Departments Reporting and Follow-Up Responsibilities

1. **Reporting Requirements**
   The New Jersey Administrative Code (N.J.A.C. 8:57-1.8) stipulates that each local health officer must report the occurrence of any case of amoebiasis, as defined by the reporting criteria in Section 2 A above. Current requirements are that cases be reported to the NJDHSS Infectious and Zoonotic Diseases Program (IZDP) using the Amoebiasis Reporting Form. A report can be filed electronically over the Internet using the confidential and secure CDRS.

2. **Case Investigation**
   It is the local health officer's responsibility to complete an Amoebiasis Reporting Form by interviewing the patient and others who may be able to provide pertinent information. Much of the information required on the form can be obtained from the patient's healthcare provider or the medical record.

   a. Use the following guidelines for assistance in completing the form:
      1) Accurately record the demographic information, date of symptom onset, symptoms, and medical information. **If patient does not have any symptoms related to infection this is not a reportable case (carrier state).**
      2) When asking about exposure history (food, travel, activities, etc.), use the incubation period range for amoebiasis (2–4 weeks). Specifically, focus on the period beginning a minimum of 2 weeks prior to the patient's onset date back to no more than 4 weeks before onset.
      3) If possible, record any restaurants at which the case ate, including food item(s) and date items were consumed. If you suspect that the case became infected through food and an outbreak is suspected, use the Patient Food History Listing, Patient Symptoms Line and Food-Specific Attack Rate forms to facilitate recording additional information. Ask about travel history and outdoor activities to help identify where the patient became infected.
      4) Ask about water sources because amoebiasis may be acquired through water consumption.
      5) Ask about household/close contacts. Check whether the patient attends or works at a daycare facility and/or is a foodhandler to examine the patient's risk of having acquired the illness from, or the patient's potential for transmitting it to, these contacts.
      6) If there have been several unsuccessful attempts to obtain patient information (*e.g.*, the patient or healthcare provider does not return calls or does not respond to a letter, or the patient refuses to divulge information or is too ill to be interviewed), please fill out the form with as much information as possible. Please note on the form the reason why it could not be filled out completely. **If CDRS is used to report, enter collected information into the "Comments" section.**

   After completing the form, it should be mailed (in an envelope marked "Confidential") to the NJDHSS IZDP, or the report can be filed electronically over the Internet using CDRS. The mailing address is:

   NJDHSS
   Division of Epidemiology, Environmental and Occupational Health
   Infectious and Zoonotic Diseases Program
   P.O.Box 369
   Trenton, NJ 08625-0369

   b. Institution of disease control measures is an integral part of case investigation. It is the local health officer's responsibility to understand, and, if necessary, to institute the control guidelines listed below in Section 4, "Controlling Further Spread."

4) CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (N.J.A.C. 8:57-1.12)

Foodhandlers with amoebiasis must be excluded from work.

Note: A case of amoebiasis is defined by the reporting criteria in Section 2 A of this chapter.

Minimum Period of Isolation of Patient

After diarrhea has resolved, foodhandling facility employees may only return to work after producing **one (1)** negative stool specimen. If a case-patient has been treated with an antimicrobial, the stool specimen shall not be submitted until at least 48 hours after cessation of therapy. **In outbreak circumstances, a second consecutive negative stool specimen will be required prior to returning to work.**

Minimum Period of Quarantine of Contacts

Contacts with diarrhea who are foodhandling facility employees shall be quarantined in the same manner as a case-patient (see above paragraph) and handled in the same fashion.

Note: A foodhandler is any person directly preparing or handling food. This can include a patient care or child care provider.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

Daycare

Since amoebiasis may be transmitted person-to-person through fecal-oral transmission, it is important to follow up on patients with amoebiasis in a daycare setting carefully. General recommendations include:

- Children with amoebiasis who have diarrhea should be excluded until their diarrhea has resolved.
- Children with amoebiasis who have no diarrhea and who are otherwise not ill may remain in the program if special precautions are taken.
- Since most staff in child care programs are considered foodhandlers, those with *E. histolytica* in their stools (symptomatic or not) can remain on site, but must not prepare food or feed children until their diarrhea has resolved and they have **one (1)** negative stool test (submitted at least 48 hours after completion of antibiotic therapy, if antibiotics are given).

School

Since amebiasis may be transmitted person-to-person through fecal-oral transmission, it is important to follow up patients with amoebiasis in a school setting carefully. General recommendations include:

- Students or staff with amoebiasis who have diarrhea should be excluded until their diarrhea has resolved.
- Students or staff who do not handle food but have amebiasis with no diarrhea or mild diarrhea and are not otherwise sick, may remain in school if special precautions are taken.
- Students or staff who handle food and have *E. histolytica* infection (symptomatic or not) must not prepare food until their diarrhea has resolved and they have **one (1)** negative stool test (submitted at least 48 hours after completion of antibiotic therapy, if antibiotics are given).

Community Residential Programs
Actions taken in response to a patient with amoebiasis in a community residential program will depend on the type of program and the level of functioning of the residents.

In long-term care facilities, residents with *E. histolytica* should be placed on standard (including enteric) precautions until their symptoms subside *and* they have a **one (1)** negative stool for *E. histolytica.* Staff members with *E. histolytica* infection who give direct patient care (e.g., feed patients, give mouth or denture care or give medications) are considered foodhandlers and are subject to restrictions as in section 4A. In addition, staff members with *E. histolytica* infection who are not considered foodhandlers should not work until their diarrhea has resolved.

In residential facilities for the developmentally disabled, staff and clients with amoebiasis must refrain from handling or preparing food for other residents until their diarrhea has subsided and they have **one (1)** negative stool test for *E. histolytica* (submitted at least 48 hours after completion of antibiotic therapy, if antibiotics are given). Staff members with *E. histolytica* infection who are not foodhandlers should not work until their diarrhea has resolved.

Reported Incidence Is Higher than Usual/Outbreak Suspected
If the number of reported cases of amoebiasis in a city/town is higher than usual, or if an outbreak is suspected, investigate to determine the source of infection and mode of transmission. A common vehicle (such as water, food or association with a daycare center) should be sought and applicable preventive or control measures should be instituted (*e.g.*, removing implicated food items from the environment). Control of person-to-person transmission requires special emphasis on personal cleanliness and sanitary disposal of feces. Consult with the NJDHSS IZDP at 609.588.7500. The Program staff can help determine a course of action to prevent further cases and can perform surveillance for cases across several jurisdictions and therefore be difficult to identify at a local level.

D. Preventive Measures

Personal Preventive Measures/Education
To prevent future exposures, recommend that individuals:

- Always wash their hands thoroughly with soap and water before eating or preparing food, after using the toilet, and after changing diapers.
- After changing diapers, wash the child's hands as well as their own.
- Dispose of feces in a sanitary manner.
- When caring for others with diarrhea, scrub their hands with plenty of soap and water after cleaning the bathroom, helping the persons use the toilet, or changing diapers, soiled clothes or soiled sheets. Wash their hands properly with plenty of soap and water, especially before handling food, before eating and after toilet use.
- Avoid sexual practices that may permit fecal-oral transmission. Latex barrier protection should be emphasized as a way to prevent the spread of amebiasis to a patient's sexual partners as well as being a way to prevent exposure to and transmission of other pathogens.

International Travel
Travelers to developing countries should:

- Drink only bottled water, carbonated water, and canned or bottled sodas. Boiling water for one minute will kill parasites, including *E. histolytica*, bacteria, or viruses that may be present. However, *E. histolytica* is not killed by low doses of chlorine or iodine; do not rely on chemical water purification tablets (such as halide tablets) to prevent amoebiasis.
- Cook food thoroughly to kill parasites, bacteria, or viruses that may be present. If you plan to eat raw vegetables that may be contaminated, they should first be washed with a strong detergent soap.

- Do not eat fruit that already has been peeled or cut.
- Drink only pasteurized milk or dairy products. Avoid eating unpasteurized dairy products or drinking raw milk. They can be contaminated with unclean water.

ADDITIONAL INFORMATION

An *Amoebiasis Fact Sheet* can be obtained at the NJDHSS website at <http://www.state.nj.us/health>.

Note: For more information regarding international travel and amoebiasis, contact the CDC's Traveler's Health Office at (877) 394-8747 or through the Internet at <http://www.cdc.gov/travel>.

The formal CDC surveillance case definition for amoebiasis is the same as the criteria outlined in 2A. CDC case definitions are used by state health departments and CDC to maintain uniform standards for national reporting. For reporting to the NJDHSS, always refer to Section 2A.

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